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Remarks

Applicant gratefully acknowledges the withdrawal of the objections/rejections in the previous office action. Minor amendments have been made to clarify the claims. The following remarks are believed to overcome the new rejection:

Rejection under 35 U.S.C. § 103

The examiner rejects claims 1-28 as obvious over AQUAZOLE™ by Barnaud et al ("Barnaud") in view of WO99/13028 to Exxon ("Wittenbrink"). The examiner contends that it would be obvious to use a Fischer-Tropsch derived fuel in the compositions of the primary reference (Barnaud). According to the examiner, the combination "inherently result[s] in applicants claimed ignition delay and cetane values." Office action, page 2.

Response

In order to establish that the claims are *prima facie* obvious over the prior art, the examiner must point to two things in the prior art, and not in the applicant's disclosure--(1) the suggestion of the invention, and (2) the expectation of its success. *In re Vaeck*, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). The examiner has not met this burden for the following reasons.

Barnaud teaches "water in diesel fuel" compositions (Barnaud, p. 1, under "2. INTRODUCTION"). In Barnaud's compositions, **"diesel fuel is the external phase"** (AQUAZOLE™). Barnaud, p. 2 of text, paragraph column 1, paragraph number "1" (emphasis added).

The phrase "diesel fuel" typically refers to a distillate fuel blended from a variety of refinery streams to meet desired specifications:

> No. 1 diesel fuel (sometimes called super-diesel) is generally made from virgin or hydrocracked stocks having cetane numbers above 45. It . . . has a boiling range of from about 360 °F to 600 °F (182 to 316°C) and is used in high-speed engines in automobiles, trucks, and buses.
>
> No. 2 diesel fuel is very similar to No. 2 fuel oil, and has a wider boiling range than No. 1. It usually contains cracked stocks and may be blended from naptha, kerosine, and light cracked oils from the coker and the fluid catalytic cracking unit. Limiting specifications are flash point [125 °F (52°C)], sulfur

content (0.05% max.), distillation range, cetane number or cetane index (40 min.), percent aromatics, and cloud point.

J. Gary, et al. *Petroleum Refining, Technology and Economics* (4nd Ed. 2001) 17-18.

Fischer-Tropsch derived fuels are described in the specification:

> By "Fischer-Tropsch derived" is meant that the fuel (gas oil) is, or derives from, or produced from, a synthesis product of a Fischer-Tropsch condensation process directly and/or by further treatments. The Fischer-Tropsch reaction converts carbon monoxide and hydrogen into longer chain, usually paraffinic, hydrocarbons :
>
> $$n(CO + 2H_2) = (-CH_2-)_n + nH_2O + \text{heat},$$
>
> in the presence of an appropriate catalyst and typically at elevated temperatures (e.g. 125 to 300 °C, preferably 175 to 250 °C) and/or pressures (e.g. 500 to 10000 kPa (5 to 100 bar), preferably 1200 to 5000 kPa (12 to 50 bar)). Hydrogen:carbon monoxide ratios other than 2:1 may be employed if desired.

Specification, page 8, ll. 16-29. The specification also explains that:

> By virtue of the Fischer-Tropsch process, a Fischer-Tropsch derived gas oil has essentially no, or undetectable levels of, sulphur and nitrogen. Compounds containing these heteroatoms tend to act as poisons for Fischer-Tropsch catalysts and are therefore removed from the synthesis gas feed. Further, the process as usually operated produces no or virtually no aromatic components. The aromatics content of a Fischer-Tropsch gas oil, as determined for instance by ASTM D4629, will typically be below 1 % w/w, preferably below 0.5 % w/w and more preferably below 0.1 % w/w.

Specification, page 10, l. 35 - page 11, l. 9.

The examiner does not contend that Barnaud's "diesel fuel" is a Fischer-Tropsch derived fuel. However, the examiner contends that Wittenbrink "renders obvious the use of a Fischer-Tropsch derived fuel in the compositions of the primary reference." Office action, page 2.

Wittenbrink describes a "stable, macro emulsion wherein **water is the continuous phase.**" Wittenbrink, p. 2, Summary of the Invention (emphasis added). The examiner has not established that Wittenbrook would motivate a person of ordinary skill in the art to modify Barnaud **to use Wittenbrink's internal phase as the *external***

***phase, or the continuous phase* of Barnaud's fluid**. The examiner therefore has not pointed to a teaching or suggestion in Barnaud, or in another cited reference, that would motivate a person of ordinary skill in the art to make the modification(s) required to produce a composition comprising a Fischer Tropsch derived fuel **as the external phase.** *In re Brouwer*, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995).

The examiner assumes that Barnaud's water-in-diesel fuel emulsions are modified to use Wittenbrink's internal phase as an external phase, and then assumes that the resulting hypothetical combination would "inherently result[] in applicant's claimed engine delay and cetane values." However, as seen above, the examiner has not pointed to a teaching or suggestion to use Wittenbrink's internal phase as the external phase of Barnaud's fluid. **The examiner is making assumptions about the properties of a hypothetical composition that is not taught or suggested by the cited references.**

It is legally incorrect for the examiner to simply assume that a reference inherently meets the limitations of the claims and then argue that a case of *prima facie* obviousness has been made based on that assumption. "[T]he examiner's assumptions do not constitute the disclosure of prior art." *In re Rijckaert*, 9 F.3d 1531, 1533-34, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1998).

The examiner's assumptions also contradict what the specification states was known in the art at the time the invention was made. The specification explains that it was "known that **ignition delay or lag is longer and cetane number is lower with emulsions based on conventional fuel than with non-emulsified conventional fuel.**" Specification, page 3, ll. 15-19 (emphasis added). Based on the foregoing, a person of ordinary skill in the art at the time the invention was made would have expected the claimed compositions to produce a ***longer* ignition delay and a *lower* cetane number** than conventional fuel.

It is Applicants' specification--not the cited references--which teaches that:

> It has now been found that when using water-in-fuel emulsions (where fuel is the continuous phase), in which the fuel component comprises a Fischer-Tropsch diesel product, certain engine performance advantages are achieved. **Such performance advantages are in particular that emissions**, for example of NO_X, black smoke and/or particulate matter (PM), **are lower as compared to**

> **conventional fuels but without lengthening the ignition delay and reducing the cetane number. This is achieved without the need for, or at reduced levels of, ignition improving additives, and without engine modifications. Such emulsions having these characteristics have not been disclosed.**

Specification, page 4, ll. 11-23 (emphasis added).

The examiner has not made particular findings as to why the skilled artisan, with no knowledge of the claimed invention, would have chosen to use Wittenbrink's internal phase as the external phase of Barnaud's fluid. The examiner has done nothing more than merely identify individual components of the claimed combination in individual references. "[A] rejection cannot be predicated on the mere identification [even in a single cited reference] of individual components of claimed limitations. Rather, particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed." *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317-18 (Fed. Cir. 2000). The examiner erroneously is using "the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious. . . . '[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.'" *Id.; In re Fritsch*, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992), citing *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

The examiner has not pointed to a teaching or suggestion of the claimed composition in the cited references. The examiner certainly has not pointed to a teaching or suggestion: that the claimed water-in-fuel emulsions could produce "an ignition delay of equal or less than the equivalent cetane number of 40," claim 1 (see also method claim 21); that the claimed water-in-fuel emulsions could produce an "ignition delay of equal or less than the equivalent cetane number of about 44" (claim 4, see also claim 22); that the claimed water-in-fuel emulsions could produce an "ignition delay of equal or less than the equivalent cetane number of about 50" (claim 5); that this could be accomplished when the water-in-fuel composition "contain[ed] no ignition improving additive," claim 2 (see also claims 8, 9, 15-17, and 24-27); that the water-in-fuel emulsions of claims 6 or

20 could produce "an ignition delay of about 3 degrees of crank angle [or "3.1 degrees of crank angle," claim 7 or 22] or less" under the conditions specified in the claim(s).

Nor has the examiner pointed to a teaching or suggestion of the limitations of the the method claims.[1]

Applicant respectfully requests that the rejection of claims 1-28 as obvious be withdrawn.

CONCLUSION

For all of the foregoing reasons, Applicant respectfully requests reconsideration and allowance of all of the pending claims. The commissioner is hereby authorized to charge any additional fees or credit any overpayment to 19-1800 (File no.TS7594-US), maintained by Shell Oil Company

Respectfully submitted,

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[1] The examiner has not pointed to a teaching or suggestion of the method of claims 12-17 "comprising operating the compression ignition engine in the presence of a water-in-fuel emulsion composition." The examiner has not pointed to a teaching or suggestion of a method of claim 18 which requires "replacing said fuel in said engine by a water-in-fuel emulsion composition which comprises a Fischer-Tropsch derived fuel and water" . . . "without reducing the ignition quality." The examiner has not pointed to a teaching or suggestion of the method of claims 19-27 "comprising including in said engine a water-in-fuel emulsion composition which comprises a Fischer-Tropsch derived fuel and water." The examiner also has not pointed to a teaching or suggestion in the cited references of the method of claim 28, directed to a "process for the preparation of a water-in-fuel emulsion composition which process comprises admixing a Fischer-Tropsch derived fuel with water."